TABLE

	NON ABLATED VEINS				ABLATED VEINS			
	PRE-TREATMENT		3 MONTHS		PRE-TREATMENT		3 MONTHS	
	OSTIUM (cm)	1 CM FROM OSTIUM (cm)	OSTIUM (cm)	1 CM FROM OSTIUM (cm)	OSTIUM (cm)	1 CM FROM OSTIUM (cm)	OSTIUM (cm)	1 CM FROM OSTIUM (cm)
LEFT INFERIOR VEIN	1.42 ± 0.22	1.19 ± 0.25	1.34 ± 0.22	1.14 ± 0.24	1.34 ± 0.37	1.26 ± 0.27	1.00 ± 0.39	1.25 ± 0.33
RIGHT INFERIOR VEIN	1.58 ± 0.24	1.16 ± 0.19	1.47 ± 0.25	1.06 ± 0.19	1.54 ± 0.32	1.07 ± 0.34	1.55 ± 0.24	1.02 ± 0.24
LEFT SUPERIOR VEIN	1.63 ± 0.14	1.27 ± 0.01	1.53 ± 0.18	1.18 ± 0.08	1.80 ± 0.42	1.44 ± 0.33	1.74 ±0.43	1.40 ± 0.30
RIGHT SUPERIOR VEIN	1.89 ± 0.38	1.57 ± 0.24	2.01 ± 0.51	1.64 ± 0.36	1.67 ± 0.23	1.35 ± 0.20	1.55 ± 0.24	1.26 ± 0.22

5:15 p.m.

834-6 **Magnetic Navigation System for Intracardiac Mapping of Supraventricular Tachycardia in Humans**

Mitchell N. Faddis, Kousik Krishnan, Frank Ngo, Madhukar Gupta, Amit Shanker, Jane Chen, Bruce Lindsay, Washington University School of Medicine, St. Louis, MO

We have previously demonstrated the safety and efficacy of a novel magnetic guidance system (MGS) for precise movement of a magnetic catheter (MC) in patients referred for routine electrophysiology procedures. The purpose of this study was to evaluate the safety and efficacy of the MGS for mapping supraventricular tachycardia (SVT) in patients referred for catheter ablation. METHODS: Six patients with SVT were studied. The MGS is composed of biplanar fluoroscopy and an array of superconducting electromagnets that surround the patient's torso and generate a magnetic field to navigate an 8 F MC. A graphical computer interface is used to select the magnetic field vector based on a target site selected on the fluoroscopic image. Standard nonmagnetic electrophysiology catheters were used for pacing and recording. At the conclusion of the mapping procedure the MC was removed and the ablation procedure was completed with a standard deflectable catheter.
RESULTS: Intracardiac mapping was performed in 3 patients with WPW syndrome, 2 with AV node reentry, and 1 with typical atrial flutter. Right atrial mapping during atrial flutter confirmed isthmus dependence. One accessory pathway (AP) was on the lateral aspect of the tricuspid valve and two were on the lateral aspect of the mitral valve. One left sided AP was approached retrogradely. Transeptal cannulation of the left atrium was used for the other. Recordings made at AP sites with both a standard catheter and the MC were comparable. In the patient who underwent the transeptal cannulation, the MC was guided to each of the pulmonary veins to assess its navigability. The MC was also directed to preselected left paraseptal, posterior, and lateral targets on the mitral annulus as delineated by electrodes of the coronary sinus catheter using both retrograde and transeptal approaches. The MC was successfully navigated to each of these targets and provided stable electrograms. The mean fluoroscopy exposure was < 3 minutes/patient. There were no complications. CONCLUSIONS: These preliminary results demonstrate the accuracy and safety of the MGS for mapping the atria, pulmonary veins, tricuspid annulus, and mitral annulus in patients referred for SVT ablation.

POSTER SESSION

1163 Supraventricular Tachycardia Mechanisms and Treatment

Tuesday, April 01, 2003, 9:00 a.m.-11:00 a.m.
McCormick Place, Hall A
Presentation Hour: 10:00 a.m.-11:00 a.m.

1163-3 **Reentry Within the Cavotricuspid Isthmus: A Novel Isthmus Dependent Circuit**

Yanfei Yang, Niraj Varma, Melvin M. Scheinman, University of California, San Francisco, CA, Case Western Reserve University/University Hospital of Cleveland, Cleveland, OH

Background: We have previously described several patterns of cavotricuspid isthmus (CTI) dependent atrial flutter (AFL), including lower loop reentry and double-wave reentry. We describe a new pattern of CTI dependent AFL.
Methods: Four patients who were referred for AFL ablation underwent detailed electrophysiological study. Entrainment mapping was performed at the CTI, the os of the coronary sinus (CSOS) and low lateral RA in 3 patients, and over the CTI alone in 1. Radiofrequency (RF) ablation was applied to the CTI until bi-directional block was achieved.
Results: Sustained AFL was induced or spontaneously occurred in all 4 patients. Typical CTI dependent counterclockwise flutter was present during study in 3 patients. However, a separate tachycardia manifest by simultaneous or near simultaneous activation of the septum and lateral wall were seen, with tachycardia cycle length of 324±71ms (275 - 430ms). During this tachycardia, fractionated or double potentials were recorded at the CTI just outside of the CSOS. In 3 patients manifest entrainment was documented from sites outside the CTI, proving that the right atrial septum and lateral wall were bystanders. However, concealed entrainment was documented in all from within the CTI. Split potentials from the CTI were also entrained. Application of RF energy to the CTI resulted in tachycardia termination. After achievement of bi-directional block no arrhythmias were inducible.
Conclusions: We describe a tachycardia circuit confined to within the CTI, and hypothesize that this circuit involves conduction either around surrounding collagen or pectinate ridges acting as a central obstacle.

1163-4 **ECG Differentiation of Typical AV Node Reentrant Tachycardia From Orthodromic AV Reciprocating Tachycardia Mediated by Concealed Accessory Pathway in Children**

Edgar T. Jaeggi, Thomas Gilljam, Urs Bauersfeld, Christine Chiu, Robert M. Gow, The Hospital for Sick Children, Toronto, ON, Canada, University Children's Hospital, Zurich, Switzerland

Background: The non-invasive differentiation between mechanisms of supraventricular reentrant tachycardia (SVT) has not been studied in the pediatric age group. Yet, this information may help in counseling and facilitate therapeutic ablation procedures.
Objectives: We assessed the utility of surface ECG parameters for the distinction of AV node reentrant tachycardia (AVNRT) from AV reciprocating tachycardia mediated by concealed accessory pathway (AVRT). Based on the initial results, we developed and prospectively tested the accuracy of a stepwise diagnostic ECG algorithm.
Methods and results: One-hundred forty-eight ECG tracings, showing regular narrow QRS complex tachycardia with 1:1 AV conduction and RP/PR interval ratio <1, were obtained from children at 10.6 + 3.9 years of age. The initial 102 ECGs (70 12-lead; 36 Holter/event recorder) were independently analyzed by 3 electrophysiologists, without knowledge of the patient data and underlying SVT mechnism. No ECG criteria were found to discriminate the SVT mechanism on Holter/event recorder tracings: their interpretation resulted mainly in a wrong diagnosis. By contrast, 5 criteria were found to be significant discriminators of SVT mechanism on 12-lead ECGs. Predictors of AVRT (n=33) were the presence of a visible p-wave in 74% (sensitivity 92%; specificity 64%), a RP interval ³ 100 ms in 91% (sensitivity 84%; specificity 91%), and ST-segment depression ³ 2mm which persisted 80 ms after the J point in 73% (sensitivity 52%; specificity 82%). The appearance of pseudo-r´ waves in V1 and pseudo-S waves in the inferior leads during SVT predicted AVNRT (n=37) in 100% (sensitivity 55% and 20%; specificity 100%). The subsequent 46 12-lead SVT ECGs (25 AVRT, 21 AVNRT) were analyzed in a stepwise approach for the presence of pseudo-r´ and -S waves, RP duration and ST-segment depression. Overall, the new algorithm had an accuracy of 91% (42/46 cases) in discriminating AVNRT from AVRT.
Conclusion: Our new 12-lead ECG algorithm could provide a useful tool for the non-invasive differentiation of reentrant SVT in children. By contrast, the interpretation of the tachycardia mechanism on Holter/event recorder ECG tracings is predominantly misleading.

1163-5 **Long-Term Outcome After Ablation of Postoperative Atrial Reentrant Tachycardias Is Complicated by Atrial Fibrillation**

Natasja M. de Groot Somchai Prechawat, Erik van Gennep, Ernst E. van der Wall, Martin J. Schalij, Leiden University Medical Center, Leiden, The Netherlands

Background: 3-D Electro-anatomical activation/voltage mapping has proven to be an useful aid in selecting target sites for ablation of atrial reentrant tachycardias (ART) in pts with congenital heart disease (CHD). This study evaluated the incidence of atrial arrhyth-